R E M A R K S

Applicant has carefully considered the Office Action of August 3, 2009 rejecting all of the claims. The Applicant wishes to express his appreciation to the Examiner for the early indication of allowable subject matter.

The present response is intended to fully address all points of objection raised by the Examiner, and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

Claims 1, 10-11, and 17 are currently amended. Claims 27-28 are deleted. New independent claim 29 has been added incorporating the recitation of claims 1, 6-7, and 11-12 as suggested by the Examiner, without introducing any new subject matter into the application. Therefore claims 1-26 and 29 remain in the case.

To summarize the focus of the application, the present invention relates to a hydrostatically controlled thermostatic mixing valve providing a high rate of fluid flow in the control channels which are for this reason not subject to clogging of the passages of the mixing valve by particles found in the fluid as in the prior art cited by the Examiner. The entire mixing regulation assembly is movable within the housing 61 (Fig. 8) so as to facilitate rapid response. See, by way of example, the various embodiments of the spool assembly 30 (Fig. 3), 130 (Fig. 10), 220 (Fig. 11), 305 (Fig. 16), 405 (Fig. 18), and 620 (Fig. 21); the mixing regulation subassembly 222 (Fig. 11); the built-in flow divider which, in one embodiment comprises, by way of example, aperture 37 and radial grooves 41 (Fig. 3); the flow control mechanism Fig. 7; and

the sensing element 50 (Fig. 3), all of which are disposed within the mixing valve, entirely changing their position in relation to housing 61 upon a change in the temperature or pressure of one of the inlet streams.

Additionally, the entire flow of water is first mixed and then divided and directed as two streams into the control channels which are also the main flow passages for the inlets and outlets. These flow passages work to prevent interference of the inlet water pressure on outlet water temperature. This was not disclosed by Brown nor in any of the prior art.

Claim 10 is rejected by the Examiner under 35 U.S.C. 112, second paragraph, "as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The term 'space saving element' is not sufficiently defined in the specification".

Claim 10 has been currently amended by replacing the term "space-saving element" with the wording: "at least one space saving ring located in the internal volume of the spool on at least one side of a bimetal disk" as referenced in the description of the present invention in relation to Fig. 20. Claim 10 has been amended to further clarify the invention and to overcome the Sec. 112, second paragraph, rejection.

Claims 27-28 are rejected by the Examiner under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

The omnibus claims 27-28 have been deleted, thus mooting and overcoming the section 112, second paragraph,

rejection by the Examiner.

Claims 1-3; 5-6; 8-9; 13-18; 20-26 are rejected by the Examiner under 35 U.S.C. 102(b) as being anticipated by Brown (US Pat. 2,449,766).

It should be noted that the Brown reference is clearly disclosed in the background section of the text, and the PCT Examiner did not find it relevant and subsequently issued a favorable IPER dated Feb. 9, 2005 on all the claims.

Brown teaches a pilot operated type feedback servomechanism valve (column 3, line 7). Typically, these types of valves are characterized by control channels which transmit only a small part of the flow (col. 5, line 43).

In contrast, the shorter and wider control channels of the present invention allow the rapid and full flow of fluid through the channels as noted (p.12, line 20):

> The general principal [sic] employed in regard to the preferred embodiment of the present invention relates to a mixing valve including a pressure operated feedback servomechanism, which utilizes substantially the full flow of fluid in the control channels.

In addition, Brown teaches a mixing valve which has direct inlet of unmixed cold and hot streams into his control channels so that there is significant pressure from the inlet streams to affect the water temperature at the outlet.

In contrast to this, the Applicant's invention mixes the entire streams of cold and hot water at the inlets, and then divides and directs these two streams into the control channels, which are also the main water carrying ways used

for regulation, before recombining them in a configuration which prevents the influence of the inlet water pressure on the outlet water temperature. (See schematic Figs. 1 and 2).

Furthermore, as taught by Brown, the flow control channels as well as the thermal responsive element and feedback mechanism are all stationary in relation to the housing.

In contrast, the components in the Applicant's invention, all of which are disposed within the mixing valve 60, are all displaceable and entirely change their positions in relation to the housing 61 (Fig. 8)upon a change in the temperature or pressure of one of the inlet streams. This feature was not disclosed by Brown nor in any of the prior art.

Brown teaches a mixing valve which has separate narrow control channels 55, 56 (Fig. 1) each deriving from a different inlet. Accordingly, a fluctuation of pressure in one of the inlets at Brown will cause a significant deviation from the preset temperature at the outlet as this pressure change will be introduced directly into one of the control chambers 52, 52a (Fig. 1).

It is commonly known, by those having ordinary skill in the prior art, that the control channels of servomechanism valves, like the device taught by Brown, are easily clogged by suspended particles in the water supply due to their construction with long narrow fluid passageways.

In contrast, the improved type of mixing valve described by the Applicant eliminates the clogging problems common in many other thermostatic servo-controlled mixing

valves by removal of any relatively lengthy and narrow flow passages (see description of Figs. 14-15, paragraph 7, line 2). Furthermore, the division of the full mixed water flow into two substantially equal component streams provides a rapid turbulent flow resulting in eliminating the possibility of blockage evident in other types of mixing valves.

In respect of these significant differences over Brown and to traverse the rejection of the Applicant's invention as generally anticipated by Brown, claim 1 is currently amended to include the phrases: "utilizing substantially the full flow of fluid in the relatively short and wide control channels" (lines 8-11) and "a mixing regulation assembly movably disposed within said housing" (line 19).

The currently amended claims 1, 10-11, and 17 and those claims dependent thereon, are consequently deemed allowable.

Claims 6-7, 11-12, and 19 which the Examiner has suggested as being acceptable if rewritten, have been incorporated into a new claim 29.

The Examiner has rejected claim 4 under 35 U.S.C. 103(a) as being unpatentable over Brown (US Pat. 2,449,766) in view of Riis (US Pat. 3,901,261).

With regard to Brown, as pointed out by the Examiner, "Brown fails to disclose: wherein said first fluid outlet includes an outlet flow regulator valve for controlling the rate of flow through said fluid mixing valve."

The teaching of Brown regarding "some further extension which will serve as the final fluid outlet" (col. 3, lines 38-42), is indefinite. This comprises an element which is not analogous to the mixing valve of the present invention

which is in a housing with inlet and outlet channels incorporated therein along with displaceable components essential for dynamic control of the fluid flow.

Riis (US Pat.3,901,261), discloses a pressure balancing valve which is not responsive to fluctuations in temperature of the supply lines.

The Applicant's invention, unlike the prior art of Riis, is a true thermostatic valve which is not in the same category. The present invention is responsive to both pressure and temperature variations in at least one of the inlets. Therefore the prior art of Riis, having a significantly different component, should not be cited as teaching anything that would have been anticipated in relation to the present invention.

The Brown patent adds nothing to the teaching of Riis which would render the present invention obvious. The making of the combination of the Brown and Riis references to form the basis of the Sec. 103(a) rejection would not have occurred to a person of ordinary skill in the art except after the fact, when seen in the light of the present invention. The Applicant, therefore, respectfully requests that the Examiner's rejection be withdrawn and claim 4 be allowed as patentable.

In citing the references under Sec. 103(a), the question is raised whether the references would suggest the invention, as stated in the decision of In Re Lintner (172 USPQ 560, 562, CCPA 1972):

> In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient